Short Communications

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Awareness and Use of e-cigarettes among Adolescents and Their Adult Caregivers in Two Cities of India

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Abstract

Introduction/Objective: E-cigarette use poses an additional risk for individuals who are not cigarette smokers, especially adolescents. The marketing tactics of the industry have substantially increased the prevalence of e-cigarettes, use among adolescents. India banned e-cigarette in September 2019 that has been criticized by interested groups. We investigated that among adults and adolescents, who are more aware and using e-cigarette more? **Methods:** The data were taken from a population-based representative household survey conducted in Mumbai and Kolkata in the year 2019-2020. A household was enrolled if it had a 12-14 year old adolescent living in it and both adolescent and adult caregivers agreed to participate in the survey. The data from 944 adolescents out of 15,436 enumerated in Mumbai and 1038 out of 24,284 enumerated in Kolkata and their caregivers were analyzed for awareness and ever use of e-cigarettes. **Result:** The awareness of e-cigarettes among 12-14 year olds in Mumbai was 15.5%, almost identical among boys and girls whereas is in Kolkata it was 11.2%. In contrast, among the adolescents' adult caregivers in Mumbai, the awareness was low, 3.9% and in Kolkata, 4.6%. Overall awareness was significantly higher among adolescents than among caregivers, especially among adolescent girls than among female caregivers in both cities. Conclusion: The awareness and the use of e-cigarette were very little and the messages from the e-cigarette industry seem to be targeted more towards adolescents than adults. The ban on an e-cigarette in India has helped in prevented the marketing of ENDS to adolescents.

Keywords: Tobacco industry- Electronic nicotine delivery devices- Addiction- Nicotine

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Introduction

ENDS (Electronic Nicotine Delivery Systems), often referred to as e-cigarettes, are comparatively recent devices marketed as nicotine products. Unlike other smoking products that contain tobacco and combust it at the time of use to deliver nicotine to the user, e-cigarettes directly use nicotine and deliver it to the user by vaporizing it with the help of battery-operated electronic circuitry. The main marketing point of e-cigarettes is that they are less harmful than conventional cigarettes because they are purported to deliver fewer toxins and carcinogens than combusted tobacco. If they were used in place of combustible cigarettes only by existing smokers, there would be little doubt about the public health benefit (Münzel et al., 2020).

The introduction and marketing of e-cigarettes, however, has increased overall tobacco product use in many countries, especially among adolescents (Hammond et al., 2019).This has led experts to worry that the overall public health impact of e-cigarettes may be detrimental, rather than beneficial (St Helen and Eaton, 2018).

In India, the expert opinion was that given the huge spectrum of tobacco products, particularly non-combustible products currently available in India, the addition of one more type is likely to create more problems rather than provide a solution.It was argued that it was better to nip the problem in the bud while the awareness and the use were quite low ("White Paper on Electronic Nicotine Delivery System," 2019). In the Global Adults Tobacco Survey conducted in 2016-17 in a representative sample of 70,037 persons 15 years and older, the awareness of e-cigarettes was 3% and ever use among those who were aware was 0.7%, so in the population, ever use was 0.02% (Chakma et al., 2020).

After much deliberation, the Government of India banned the sale of e-cigarettes through an ordinance in September 2019 and subsequently through an act of parliament in December 2019 (Ministry of Health and Family Welfare - Government of India. Global Adult

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Tobacco Survey (India 2016-2017 Report). There has been a lot of pushback by the tobacco industry and allied groups that vapers (e-cigarette users) in India are now deprived of an alternative that may be less harmful than conventional cigarettes.We examine data that we collected from a survey of 12-14 year old adolescents and their adult caregivers in two cities of India in 2019-20, more than a year before the ban came into the effect. We estimate the awareness and use of e-cigarettes in adolescents and their adult caregivers.

Materials and Methods

We selected Mumbai, Maharashtra and Kolkata, West Bengal for our sampling frame as these are two large, populous, geographically dispersed urban areas that reflect India's urban variation in the prevalence of tobacco use, tobacco control policy implementation, socioeconomic development, infrastructure and cultural factors. In 2019-2020, a multi-stage sampling design was used to obtain a population-based household representative sample of communities and adolescents in both cities. The sampling frame was obtained from the National Sample Survey Organisation for selecting representative samples. A household was enrolled if it had a 12-14 year old adolescent living in it and both adolescents and their caregivers agreed to participate in the survey.The adolescents and their caregivers, usually one of the parents, mostly mothers (>80%), were interviewed face-to-face by trained investigators.The household response rates were excellent (85.3%). The data from 944 adolescents out of 15,436 enumerated in Mumbai and 1,038 out of 24,284 enumerated in Kolkata and their caregivers were analyzed for awareness and ever use of e-cigarettes.

Results

The table shows that the awareness of e-cigarettes among 12-14 year olds in Mumbai was 15.5%, almost identical among boys and girls.In Kolkata, the awareness was 11.2%, slightly but not significantly higher among boys (13.4%) than girls (9.1%). In contrast, among the adolescents' adult caregivers in Mumbai, the awareness was low, 3.9% and in Kolkata, 4.6%. Overall awareness was significantly higher among adolescents than among caregivers, especially among adolescent girls than among female caregivers in both cities. Among those adolescents who were aware of e-cigarette, ever e-cigarette use in Mumbai was 6.2%, significantly higher among boys (10.8%) than (girls 1.2%), but not in Kolkata, with just one user each.In Mumbai, ever use among adolescents' adult caregivers who were aware of e-cigarette was 2.7% and in Kolkata, 4.2%, not significantly different from adolescents.

Discussion

The awareness as well as ever use was higher in this study than reported in GATS 2, perhaps because our sample was confined to the two very large cities.In GATS 2, awareness (5.12% vs 1.93%) and ever use (0.93% vs 0.28%) among those aware, were much higher in urban than in rural areas.

Since adolescents were more aware of e-cigarettes than their adult caregivers, it appears that the marketing messages of e-cigarette industry were reaching adolescents more than their adult caregivers. Even among those who were aware of e-cigarettes, ever use was quite low, reconfirming the findings of the Global Adults Tobacco Survey.Globally also, e-cigarette use has increased more rapidly among adolescents than adults (Carroll Chapman and Wu, 2014). Also, in the global youth tobacco survey (GYTS-4) conduced in 2019, the awareness among adolescents aged 13 to 15 years of

Table 1. Awareness and Ever Use of e-Cigarette among Adolescents and Their Adult Caregivers in Two Cities of India

	Mumbai				Kolkata			
	Male		Female		Male		Female	
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)
Adolescent								
Have you heard of e-cigarettes?								
No	406	87.7 (81.7, 91.9)	388	87.6 (80.6, 92.4)	440	82.8 (77.8, 86.9)	482	86.8 (81.1, 91.0)
Yes	74	12.3 (8.1, 18.3)	72	12.4 (7.6, 19.4)	68	17.2 (13.1, 22.2)	48	13.2 (9.0, 18.9)
Have you ever tried or experimented with e-cigarettes even once or twice?								
No	66	94.1 (83.5, 98.1)	70	99.8 (96.8, 100.0)	67	99.6 (95.7, 100.0)	47	98.5 (96.8, 99.3)
Yes	8	5.9 (1.9, 16.5)	1	0.2 (0.0, 3.2)	1	0.4 (0.0, 4.3)	1	1.5 (0.7, 3.2)
Parent								
Have you heard of e-cigarettes?								
No	170	92.4 (87.7, 95.4)	733	96.8 (94.8, 98.1)	82	84.7 (66.4, 93.9)	907	95.1 (91.5, 97.2)
Yes	10	7.6 (4.6, 12.3)	27	3.2 (1.9, 5.2)	13	15.3 (6.1, 33.6)	35	4.9 (2.8, 8.5)
Have you ever tried or experimented with e-cigarettes even once or twice?								
No	9	95.8 (70.9, 99.5)	27	100 (-)	11	68.1 (26.8, 92.5)	35	100 (-)
Yes	1	4.2 (0.5, 29.1)	0	0 (-)	2	31.9 (7.5, 73.2)	0	0 (-)

N represents unweighted count and Percentage (%) are weighted. CI, Confidence interval.

e-cigarettes was 27.3% in boys, 26.4% in girls and the use of e-cigarette was reported 3.4% in boys and 2.1 % in girls (India 2019-2023 Report).

The use of e-cigarettes was far too low for the ban on the e-cigarette to inconvenience a lot of vapers.The ban may have prevented increased availability of e-cigarettes and accompanying marketing messages from the industry that appear to have been mainly targeted towards adolescents, especially through the use of social media and the internet.Hopefully, the ban has also prevented the rapid increase in e-cigarette use observed among adolescents, like what has happened in the USA (Cullen et al., 2018). We plan to follow these adolescents and caregivers and compare their awareness and ever use post-ban.

Author Contribution Statement

PCG drafted the paper and played a major role, with contributions from MSP, in developing the research questions, conceptual framework, design and statistical analysis. MSP conceived of the field sites, developed the field operations plan, and provided critical inputs in all aspects of the study. WM, RM, NP and SN provided critical inputs in all areas of the study approach. All co-authors edited drafts of the paper, and agreed to the content of the submitted version. All authors read and approved the final manuscript..

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Ethical Approval

The study approved by the Institutional Review Boards of the Healis Sekhsaria Institute for Public Health, University of Michigan University and University of California, Los Angeles (UCLA). Parental/guardian permission was obtained for minor participants (under 18 years of age), who were asked to provide assent prior to enrollment in the study.

Availability of data and materials

After data collection is completed, de-identified study data, data dictionary and a methodology report will be made available from the corresponding author on reasonable request.

Implications

The ban on ENDS or e-cigarettes imposed by the Government in India has not affected any large number of its users. Therefore, the claims that the ban on ENDS or e-cigarettes has affected a large number of users is incorrect.

What this paper adds

• The awareness and the use of e-cigarette were very low and the messages from the e-cigarette industry were targeted more towards adolescents than towards adults. Therefore, the marketing of ENDS could open the gateway to a new form of tobacco addiction especially to adolescents, which is a potential threat to the country's tobacco control laws and currently ongoing tobacco control programs.

Conflict of Interest

The authors declared no conflict of interest.

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